SONY

LCD Monitor

LMD-1950MD

*Sony has introduced a new addition to its medical-grade LCD lineup – the LMD-1950MD 19.1-inch[*1] LCD monitor. It meets medical safety and EMC standards and also satisfies operating room requirements.*

*Incorporating a superb-quality SXGA (1280 x 1024) panel, the LMD-1950MD delivers extremely high levels of brightness, contrast, and color depth. And in addition to the Sony original X-Algorithm technology for I/P conversion, the monitor incorporates full 10-bit digital video signal processing, which enables the unit to deliver natural images with accurate color reproduction. What's more, video signals[*2] are reproduced at an extremely high-resolution of 700 TV lines, providing detailed images, which is an essential requirement for endoscopy applications.*

The LMD-1950MD is equipped with a range of interfaces as standard, allowing users to view images from multiple sources. It can accept analog or digital video signals, including high definition signals, as well as PC signals, and with multiple option boards even more signals can be accepted. In addition, the LMD-1950MD incorporates a Native Scan Mode, which allows users to monitor images from high-definition cameras in native HD resolution.

The LMD-1950MD has been designed without air vents to prevent foreign matter from entering or exiting the unit, and since the unit complies with VESA mounting standards, it can be mounted on a surgical mount-arm, making it ideal for use in operating theatres.

With other convenient features such as a User Memory function, Selectable Scan Modes, Auto Chroma Phase adjustment, and parallel/serial interfaces for remote control, the LMD-1950MD is an ideal choice for surgical endoscopy applications.

*1 Viewable area measured diagonally.
*2 Component/RGB signals only

FEATURES

Safety Listing and Compliance

The LMD-1950MD is UL60601-1 listed and complies with the CSA C22.2 No.60601 and EN 60 601-1 safety regulations, making it suitable for use in professional medical applications.

Excellent Picture Reproduction

Sophisticated I/P (Interlace to Progressive) Conversion

With conventional LCD monitors, interlace signals are displayed on the progressive LCD pixel array by combining two adjacent picture fields into one picture frame, or by doubling scanning lines to create the progressive picture frame. However, these I/P conversion methods can cause picture degradation when displaying moving images.
To solve this problem, the LMD-1950MD provides sophisticated I/P conversion using the Sony original X-Algorithm technology. This method combines the pixels above, below, and in the diagonal direction of the image in areas where there is movement, and then inserts a natural pixel to create the absent lines. The result is much smoother image reproduction for both moving and static picture areas.

Natural Gradation and Accurate Color Reproduction (10-Bit DSP)

The LMD-1950MD adopts a newly developed full 10-bit digital video signal processor to produce accurate, lifelike images with smooth and natural gradation. Conventional LCD monitors inherently exhibit color shift; however, the LMD-1950MD with its 10-bit processing minimizes this and achieves accurate color reproduction with consistent color temperature throughout the grayscale.

High Horizontal Resolution

The LMD-1950MD achieves a high horizontal resolution of 700 TV lines, providing extremely precise and detailed images, which is essential during endoscopic procedures.

High Clarity SXGA- Panel

The LMD-1950MD incorporates an extremely bright 19.1-inch[*3] LCD panel with a robust multi-layer AR-coated protection layer, which minimizes the damage that can be caused by scratching the panel. The AR coating also reduces the reflection from ambient light to a minimum. As a result, when used in bright lighting conditions, high contrast is maintained even in dark areas of the picture - a benefit over current CRT monitors.

*3 Viewable area measured diagonally.

Input Versatility

The LMD-1950MD can accept a variety of signals ranging from SD to HD video, as well as PC signals via its DVI-D or HD15 connectors. In addition to its standard inputs, four different optional input adapters are offered for use in its two expansion slots. This flexibility allows multiple signal sources from a variety of equipment to be connected and monitored by selecting them from the input button on the front panel. The LMD-1950MD also provides parallel and serial control ports as standard.

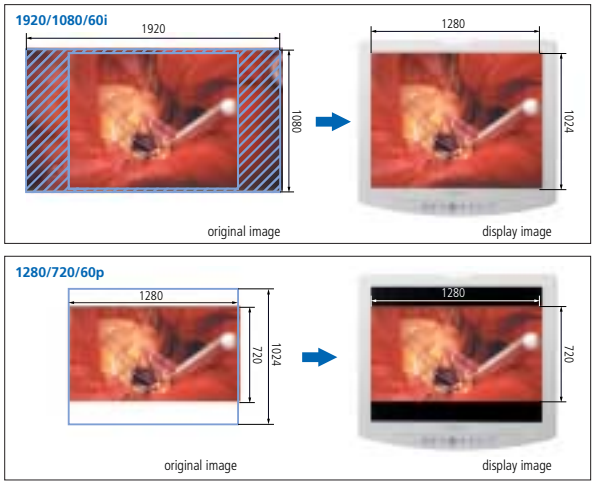
	Standard on rear panel	Optional Input Adaptors			
		BKM-227W	BKM-229X	BKM-220D	BKM-243HS
Composite	O	O			
Y/C	O	O			
RGB	O		O		
Component	O		O		
SD-SDI				O	O
HD-SDI					O
DV					
DVI-D	O				
HD15	O				

Selectable Scan Modes

The scan size options for the LMD-1950MD are 20% Over Scan, Normal Scan (7% over scan), -3% Under Scan, Full Scan, Native Scan, and Zoom.

Native Scan Mode:

Native Scan Mode can be selected when displaying images generated by HD signals (1080i/720p). This mode performs pixel-to-pixel mapping without scaling when processing high-definition signals to provide a native HD image on the monitor. The center area of the image, which is most vital during endoscopic applications, is displayed on the monitor.



Operational Convenience

The LMD-1950MD User Memory function allows up to 20 picture settings to be saved in the memory, enabling medical professionals and doctors to easily set, save, and recall their preferred picture settings. The following parameters can be independently set and the combination can be saved as a picture setting: *Color temperature, *Brightness, *Contrast, *Chroma, *Phase, *Aperture, *Gamma, *Aspect, *Scan, *Picture Delay Minimum, *User Memory Name.

Designed for Use in Medical Operating Theaters

The LMD-1950MD has been designed with no air vents, which means that blood, chemicals, and dust cannot enter the monitor, which helps prevent damage to the unit. This, along with the monitor's compliance to the 100-mm hole spacing VESA mounting standard and its DC power, makes the unit ideal for use with a surgical equipment arm in an operating room.

Video Input Formats

Format	Total Lines	Active Lines	Frame Rate*4	Scanning System	Aspect Ratio	Standard
575/50i (PAL)	625	575	25	2:1 Interlace	16:9/4:3	EBU N10 (PAL: ITU-R BT.624)
480/60i (NTSC)	525	483	30	2:1 Interlace	16:9/4:3	SMPTE 253M (NTSC: SMPTE 170M)
576/50p	625	576	50	Progressive	16:9/4:3	ITU-R BT.1358
480/60p	525	483	60	Progressive	16:9/4:3	SMPTE 293M
1080/50i	1125	1080	25	2:1 Interlace	16:9	SMPTE 274M
1035/60i	1125	1035	30	2:1 Interlace	16:9	SMPTE 260M/ BTA S-001B
1080/60i	1125	1080	30	2:1 Interlace	16:9	SMPTE 274M/ BTA S-001B
720/60p	750	720	60	Progressive	16:9	SMPTE 296M

*4 The frame rate is compatible with 1/1.001.

Preset Signals*5

Preset 1	Preset Signals		fH (kHz)	fv (Hz)
HD15	640 x 480	VGA Mode 3	31.5	60
		VGA VESA 72 Hz	37.9	72
		VGA VESA 75 Hz	37.5	75
		VGA VESA 85 Hz	43.3	85
		VGA Non-CRT	29.5	60
	800 x 600	SVGA VESA 56 Hz	35.2	56
		SVGA VESA 60 Hz	37.9	60
		SVGA VESA 72 Hz	48.1	72
		SVGA VESA 75 Hz	46.9	75
		SVGA VESA 85 Hz	53.7	85
		SVGA Non-CRT	37.0	60
	1024 x 768	XGA VESA 60 Hz	48.4	60
		XGA VESA 70 Hz	56.5	70
		XGA VESA 75 Hz	60.0	75
		XGA VESA 85 Hz	68.7	85
		XGA Non-CRT	47.3	60
	1152 x 864	VESA 75 Hz	67.5	75
	1280 x 960	VESA 60 Hz	60.0	60
		VESA Non-CRT	59.2	60
	1280 x 1024	SXGA VESA 60 Hz	64.0	60
		SXGA VESA 75 Hz	80.0	75
		SXGA CRT 50 Hz	52.7	50
		SXGA Non-CRT	63.2	60
	720 x 400	VGA TEXT	31.5	70

*5 The DVI signal is automatically adjusted within the range of the following input signal.
A range of Input signal: Horizontal frequency: 31.5 to 64.0 kHz
Vertical frequency: 50.0 to 85.1 Hz Dot clock: 25.0 to 108.0 MHz
For more details, please consult your nearest Sony dealer.

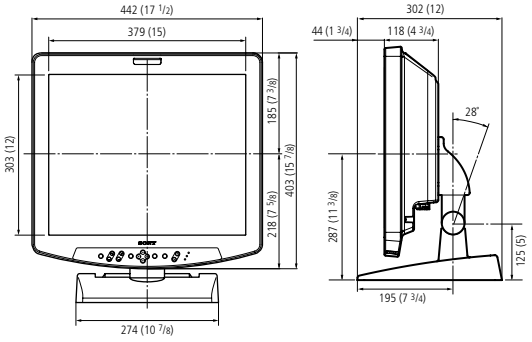
SPECIFICATIONS

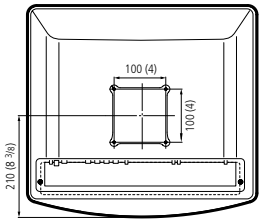
Picture Performance		
LCD Panel Type		a-Si TFT Active Matrix LCD with an AR-coated protection panel
	Resolution	1280 x 1024 dots (SXGA)
	Picture Size (H x W) (Diagonal)	Approx. 376 x 301 mm (14 7/8 x 11 7/8 inches) Diagonal 482 mm (19.1 inches)
	Aspect	5:4
	Viewing Angle	89°/89°/89°/89°(typical) (up/down/left/right contrast>10:1)
Input / Output		
Input	Composite	BNC (x 1) 1.0 Vp-p ±3 dB, sync negative
	Y/C	4pin Mini DIN (x 1) Y: 1.0 Vp-p ±3dB, sync negative C: 0.286 Vp-p ±3dB (NTSC) / 0.3 Vp-p ±3dB (PAL)
	Component/RGB	BNC (x 3)
	Component	Y: 1.0 Vp-p ±3 dB Pb, Pr: 0.7 Vp-p ±3 dB
	RGB	G: 0.7 Vp-p ±3 dB, Sync on G 0.3 Vp-p B: 0.7 Vp-p ±3 dB R: 0.7 Vp-p ±3 dB
	Ext. Sync	BNC (x1) 0.3 ~ 4 Vp-p ±bipolarity ternary or negative polarity binary
	Computer	DVI-D: TMDS (Single Link)
	HD15	Analog RGB: HD D-sub15pin (female); 0.7 Vp-p, 75 Ω sync positive (R, G, B)
Remote	Parallel	Modular 8 pin (Assignable)
	Serial	RS-232C (serial remote), D-sub 9-pin
Output	Composite	BNC (x 1), Loop-through, automatic 75 Ω termination
	Y/C	4pin Mini DIN (x 1), Loop-through, automatic 75 Ω termination
	Component/RGB	BNC (x 3), Loop-through, automatic 75 Ω termination
	Ext. Sync	BNC (x 1), Loop-through, automatic 75 Ω termination
General		
Power Consumption		Maximum: Approx. 66 W (with 2 x BKM-229X) Standard: Approx. 59 W (without optional input adaptor)
Power Requirement		DC 24 V 2.8 A, AC 100 to 240 V ±10%, 50/60 Hz
Operating Temperature		0 to 40°C (32 to 104° F)
Operating Humidity		30 to 85 % (no condensation)
Storage & Transport Temperature		-20 to 60°C (-4 to 140° F)
Storage & Transport Humidity		0 to 90 % (no condensation)
Operating / Storage / Trans. Pressure		700 hPa to 1060 hPa
Dimensions (W x H x D)(inches)		442 x 403 x 118 (17 1/2 x 15 7/8 x 4 3/4)
Mass		9.7 Kg (21 lb 6 oz) with 2 x BKM-229X
Supplied Accessories		AC adaptor, AC power cord, AC plug holder (2), DC cable, Instructions for Use, CD-ROM, Warranty Card, Using the CD-ROM Manual, Quick Reference, When you first use the monitor booklet, Sales Companies Guide

OPTIONAL ACCESSORIES

BKM-227W	NTSC/PAL Input Adaptor
BKM-229X	Analog Component Input Adaptor
BKM-220D	SDI 4:2:2 Input Adaptor
BKM-243HS	HD SDI & SDI Input Adaptor
SU-560	Monitor Stand

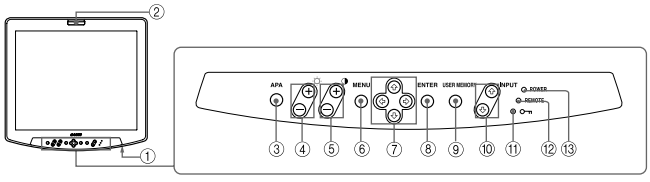
DIMENSIONS





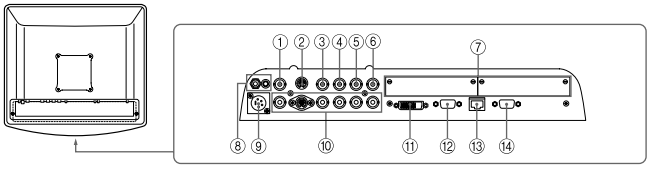
Unit: mm (inches)

FRONT PANEL



① I/O (Power) swith
② Tally lamp
③ APA (Auto Pixel Alignment) key
④ ☼ (brightness) +/– keys
⑤ ◑ (contrast) +/– keys
⑥ MENU key
⑦ Arrow keys (⬆⬇⬅➡)
⑧ ENTER key
⑨ USER MEMORY key
⑩ INPUT ⬆/⬇ keys
⑪ ⊶ (key inhibit) indicator
⑫ REMOTE indicator
⑬ POWER indicator

CONNECTOR PANEL



① COMPOSITE connector (BNC)
② Y/C connector (4-pin mini-DIN)
③ G/Y connector (BNC)
④ B/P_B connector (BNC)
⑤ R/P_R connector (BNC)
⑥ EXT SYNC (external sync) connector (BNC)
⑦ Optional input slots
⑧ ⏚ / ⏚ (equipotential/function ground) terminal
⑨ DC IN socket
⑩ Loop-through output connectors
⑪ DVI input connector (DVI-D)
⑫ HD15 input connetor (HD D-Sub 15 pin)
⑬ PARALLEL REMOTE terminal (modular connector, 8-pin)
⑭ RS-232C (serial remote) connector (D-Sub 9 pin)

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